Status of the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1-13 (cancelled)

14. (new) A position determining system in an exposure portion of a lithography tool, the system comprising:

a superluminescent device (SLD) that transmits a light beam;

a lens system that directs the light beam onto a portion of an object; and

a sensor that receives light diffracted by the portion of the object via the lens system, the sensor configured to use the diffracted light to determine a position of the object,

wherein the SLD is configured to produce a coherence length of the light beam that is less than a thickness of a lens in the lens system or less than a distance between lenses within the lens system.

15. (new) The system of claim 14, wherein the SLD is configured to produce the coherence length of the light beam that substantially eliminates interference between ghost or spurious reflections caused by the lens system and the diffracted light beam.

16. (new) The system of claim 14, wherein the SLD is configured to produce the coherence length of the light beam that is less than a smallest distance between first and second ones of the lenses in the lens system.

17. (new) The system of claim 14, wherein the SLD comprises a laser diode having an anti-reflection coating on at least one surface.

18. (new) The system of claim 14, wherein the sensor is configured to determine the position of the object using interferometry.

19. (new) The system of claim 14, wherein the SLD is configured to produce the coherence length of the light beam that is about 0.5 mm or less.

20. (new) A position measuring method, comprising:

generating superluminescent light having a coherence length;

directing the superluminescent light onto a target using a lens system;

diffracting superluminescent light from the target to produce +/- first order diffracted beams;

directing the +/- first order diffracted beams onto a combining element using the lens system;

combining the +/- first order diffracted beams using the combining element; and

determining a position of the target based on an interference pattern generated from the combining step,

wherein the coherence length of the superluminescent light is less than a thickness of a lens in the lens system or less than a distance between lenses within the lens system.

21. (new) The method of claim 20, wherein the generating step comprises using a superluminescent device (SLD) to generate the superluminescent light.

22. (new) The method of claim 20, wherein the generating step comprises using a laser diode having at least one anti-reflective surface to generate the superluminescent light.

23. (new) The method of claim 20, wherein the coherence length of the superluminescent light is about 0.5 mm or less.

24. (new) The method of claim 20, wherein the coherence length of the light beam that is less than a smallest distance between first and second ones of the lenses in the lens system.

25. (new) The method of claim 20, the coherence length of the light beam that is less than a smallest thickness of one of the lenses in the lens.